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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10-071,589	02-08-2002	Christopher Frederick Carter	THOR/0011	2703

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EXAMINER

GABOR, OTILIA

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/071,589

Applicant(s)

CARTER, CHRISTOPHER  
FREDERICK

Examiner

Otilia Gabor

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 6) ☐ Other: \_\_\_\_\_

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### DETAILED ACTION

1. The papers filed on **05/20/2002** (certificate of mailing dated 05/07/2002) have not been made part of the permanent records of the United States Patent and Trademark Office (Office) for this application (37 CFR 1.52(a)) because of damage from the United States Postal Service irradiation process. The above-identified papers, however, were not so damaged as to preclude the USPTO from making a legible copy of such papers. Therefore, the Office has made a copy of these papers, substituted them for the originals in the file, and stamped that copy:

### COPY OF PAPERS ORIGINALLY FILED

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If applicant wants to review the accuracy of the Office's copy of such papers, applicant may either inspect the application (37 CFR 1.14(d)) or may request a copy of the Office's records of such papers (*i.e.*, a copy of the copy made by the Office) from the Office of Public Records for the fee specified in 37 CFR 1.19(b)(4). Please do **not** call the Technology Center's Customer Service Center to inquiry about the completeness or accuracy of Office's copy of the above-identified papers, as the Technology Center's Customer Service Center will **not** be able to provide this service.

If applicant does not consider the Office's copy of such papers to be accurate, applicant must provide a copy of the above-identified papers (except for any U.S. or foreign patent documents submitted with the above-identified papers) with a statement that such copy is a complete and accurate copy of the originally submitted documents. If applicant provides such a copy of the above-identified papers and statement within **THREE MONTHS** of the mail date of this Office action, the Office will add the original mailroom date and use the copy provided by applicant as the permanent Office record of the above-identified papers in place of the copy made by the Office. Otherwise, the Office's copy will be used as the permanent Office record of the above-identified papers (*i.e.*, the Office will use the copy of the above-identified papers made by the Office for examination and all other purposes). This three-month period is not extendable.

### *Specification*

2. The abstract of the disclosure is objected to because the spelling error in line 6 "analyses" should be --analyzes--, and in line 7 "spectral ration" should be --spectral ratio--. Correction is required. See MPEP § 608.01(b).

***Claim Objections***

3. Claims 1-18 are objected to because of the following informalities: claim 1 contains the spelling error "analysis" in line 5; claim 2 contains the spelling error "l" instead of --1-- in line 1; claims 3, 4, 6, 9, 14, 15 all contain the spelling error "um" instead of --  $\mu\text{m}$ --; in claims 4 and 14 there should be a space between the value and the unit, 4.3  $\mu\text{m}$  to follow the same format as the other claims (i.e., in some claims there is a space and in some claims there is no space); in claims 4 and 18 there is no period present to indicate the end of the paragraph; claim 13 contains the spelling error "the second wave" instead of --the second wavelength--. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 13-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 13 recites the limitation "the spectral ratio analysis" in line 9. There is insufficient antecedent basis for this limitation in the claim.

7. Claim 17 recites the limitation "the characteristics" in line 3-4. There is insufficient antecedent basis for this limitation in the claim.

There is ambiguity as to what characteristics the claim is referring to.

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8. Regarding claim 16, the phrase "flame-like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

The balance of claims 14-18 is rejected as being dependent from a rejected base claim.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-7, 9, 11-15 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Porter (U. S. Patent 6239433).

Porter discloses an apparatus and method for generating an image of the infrared radiation emitted from a particular viewing region, in order to detect the presence of a flame or fire in that region and to actuate an alarm system when the characteristics of the fire or flame (size, location) are not consistent with the predetermined conditions, the system comprising:

- a sensor array 1 with elements  $E_i$  where  $i$  represents the number of elements in the array, for capturing the infrared radiation with a predetermined

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- wavelength, 4.3  $\mu\text{m}$ , emanating from a viewing region 12 and for outputting a signal indicative of the intensity of the radiation coming from the flame in this first wavelength range
- a second infrared sensor with an absorption band in the 5.5  $\mu\text{m}$  range for measuring the radiation emanating from the flame in this second wavelength range (see Col.6, lines 46-50) and outputting a signal indicative of the intensity of the radiation in this second wavelength range
  - a microprocessor 20 for comparing the two intensities from the outputs of the sensors and analyze whether the compared value (ratio) is indicative of the presence of a flame. See Col.6, lines 25-53 and Fig.7.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-11, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Porter and further in view of Nakauchi et al. (U. S. Patent 4179606).

Porter discloses an apparatus and method for generating an image of the infrared radiation emitted from a particular viewing region, in order to detect the presence of a flame or fire in that region and to actuate an alarm system when the characteristics of the fire or flame (size, location) are not consistent with the

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predetermined conditions, the system comprising the elements as disclosed in detail in the above paragraph. Porter discloses the measuring of the intensities from the object (flame) in the viewing area and the process of comparing these two intensities to prove the presence of the flame. Though, it is inherent that comparison of values means taking a ratio of the values in order to avoid any misunderstanding, the second reference Nakauchi et al. is used to provide this conventional method of comparing two intensity values obtained in a flame detector. Nakauchi discloses a flame sensor 7 whereby instead of using two separate detectors (which is the conventional method) he uses two separate filters 2, 3 with the same detector 7 to detect the intensities of the radiation emanating from a flame at two different wavelengths and comparing the two intensities obtained by taking their ratio. The value of the ratio thus obtained is compared to a predetermined threshold value and according to this comparison the characteristics of the flame is obtained since the ratio value is indicative of characteristics such as perfect or imperfect flame combustion. See Col.3, lines 1-49 and Fig.2.

Regarding claims 8, 10, 11 Porter fails to use a second detector array responsive in the first wavelength range and a second sensor responsive in the second wavelength range, however using double amount of sensors would have been obvious to one having ordinary skill in the art at the time the invention was made since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Co. v. Bemis Co.*, 193 USPQ 8 (7<sup>th</sup> Cir. 1979).

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13. Claims 16, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Porter and further in view of Ganeshan (U. S. Patent 6278374).

Porter fails to disclose that the image analysis includes discerning a number of separate radiation sources in the viewing area, however one of ordinary skill in the art would have been motivated to include the processing system of Ganeshan in the flame detecting system of Porter since it increases the number of sources that can be monitored and analyzed within the same viewing region at once and thus it increases the efficiency of the detection. Ganeshan uses a flame imaging system where a number of flame sources are imaged at once and where the processing involves monitoring all the sources in the same viewing region as different image frames and where the intensity of each flame in each frame is calculated and compared to a threshold value in order to determine the presence and some other characteristic of the flames. The intensity of the radiation is taken in the infrared and/or visible wavelength range. See Figs. 1, 6 and Cols. 4-6.

14. Claims 12 and 17 rejected under 35 U.S.C. 103(a) as being unpatentable over Porter and further in view of Castleman (U. S. Patent 6518574).

Porter fails to use a temperature sensor in the system, however one of ordinary skill in the art would have been motivated to include a temperature sensor in the flame sensor system of Porter since as shown by Castleman it is advantageous to include a temperature sensor 52 in the flame detection system 32 in order to indicate ambient temperature values for calibration purposes to increase the accuracy of the flame detection. See Col.14, lines 55-63.



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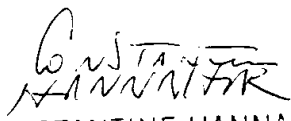
**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Otilia Gabor whose telephone number is 703-305-0384. The examiner can normally be reached on Monday-Friday between 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 703-308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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June 10, 2003

  
CONSTANTINE HANNAHER  
PRIMARY EXAMINER  
GROUP ART UNIT 2878